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Remarks

This Amendment is responsive to the Office Action dated July 17, 2006. A two month extension of time is provided herewith. Claims 2, 4, 5, 8 and 15 having been cancelled, claims 1, 3, 6, 7, 9-14 and 16-21 remain for consideration.

1-3. Applicants affirm election of Species I including claims 1-18 and 20. On June 28, 2006, after the phone conversation making the election, claims 19 and 21 were amended to depend from claim 20, and are now therefore in species I, and the patentability thereof extends from the patentability of claim 20, among other things.

4,5. Claim 18 is rejected since it is alleged that the percentages of water expelled and recirculated are more than 100%. The operative word is "recirculated". Refer to Fig. 12 which depicts claim 18. Of the 100% of product water created adjacent the cathode water plates 34, 30% of it is passed to the anode water transport plates, of which 20% is returned to the cathode flow fields. Therefore, the cathode handles 120% of the product water all of the time. Stated alternatively, the instantly produced product water is 100%, and to that is added the drag and osmosis water of 20%, totaling 120%. Subtracting the 30% that is transferred from the cathode to the anode, that leaves 90% that can leave the cathode in air.

Of the 30% that is transferred to the anode, 20% goes back to the cathode and 10% leaves the cell.

The amount of water that recirculates has nothing to do with water balance. It could be double the product water, as long as it is recirculating, without affecting water balance. Water balance is simply the product water generated: 90% goes out as vapor from the cathode and 10% goes out as water from the anode.

For the foregoing reasons, reconsideration and withdrawal of the -112 rejection of claim 18 is respectfully requested.

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To assist the Examiner in the light of the extensive amendments, a claim outline follows:

1. Apparatus - plural cells, water transfer means from cathode of at least one, to anode of at least one, same or different cell
2. (Cancelled)
3. At least one WTP has water flow field
4. (Cancelled)
5. (Cancelled)
6. Water manifold through all cells and solid plates
7. Water manifold through groups of cells
8. (Cancelled)
9. High permeability PEM
10. Water-filled phase over 10%
11. Water-filled phase 15-25%
12. 5 micron wettable non-conductive band
13. SiC
14. Deposited thickness
15. (Cancelled)
16. Porous plates at cell edges
17. Flow restriction
18. 90%, 30%, 10%
20. Method - same as claim 1 - Generic to claims 19 and 21
19. 80%-95%, 25%-40%, 5%-15%
21. Conducting water internally from cathode water transport plate at one end of stack to anode water transport plate at other end of stack, internal manifold communicates with all

5,6. Claims 1-9, 12-18 and 20 are rejected as obvious over Koch in view of Cisar. Only claims 1 and 20 are independent claims, the remaining claims derive patentability therefrom.

Enclosed is the Declaration of Robert M. Darling. In paragraph 5, the Declaration states that both amended claims 1 and 20 require solid plates between adjacent cells and transferring water only internally with the stack from cathodes to anodes. To render these claims obvious, both elements must be found in the prior art.

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Paragraph 6 of the Declaration establishes as prima facie fact that the fuel cells in Koch are separated by water transport plates, which are not solid.

Paragraph 7 of the Declaration establishes as prima facie fact that Koch refers to circulating coolant water and that Koch discloses nothing to conduct water from cathodes to anodes other than through the water transport plates, which are not solid.

Paragraph 8 of the Declaration establishes as prima facie fact that Cisar discloses water being conducted through gas barriers, which therefore are not solid.

Paragraph 9 of the Declaration establishes as prima facie fact that Cisar discloses no way to conduct water from any cathode to any anode except through the non-solid gas barrier.

Paragraph 10 of the Declaration establishes as prima facie fact that Koch and Cisar taken together do not suggest fuel cells having solid plates between adjacent cells and also transferring water from cathodes to anodes only within the stack, and that neither suggest any way to conduct water from cathodes to anodes except externally of the stack or passing from one cell to an adjacent cell through a non-solid separator. For the foregoing reasons, reconsideration and allowance of claims 1 and 20 is respectfully requested.

With respect to claims 6 and 7, paragraph 10 establishes as prima facie fact that there are no passageways for conducting coolant water from cathodes to anodes within the fuel cell stack.

With respect to claim 9, there is not even an allegation in the Office Action that a high permeability proton exchange membrane is disclosed in the references.

With respect to claim 12, paragraph 11 of the Declaration establishes as prima facie fact that the gas barrier of Cisar does not extend from one water transport plate of a cell to the other water transport plate of the same cell. With respect to claims 15 and 16, paragraph 12 of the Declaration establishes as prima facie fact that Cisar does not disclose water transfer zones from an edge of one water transport plate of a cell to an edge of the other water transport plate of the

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same cell. For the foregoing reasons, and because all of the claims depend either from claim 1 or claim 20, which are shown to be patentable hereinbefore, reconsideration and allowance of claims 3, 6, 7, 9, 12-14 and 16-18 is respectfully requested.

7. Claims 10-11 are rejected as obvious over Koch, Cisar and Asano et al. Since Asano et al is not referred to, a telephone interview was held with the Examiner on October 17, 2006; the Examiner indicated that reference to Asano et al was a mistake and it should be ignored. In the same interview, the applicant requested a one month extension of time to respond in view of two previous E-mails (referring to Asano et al) which were not answered; the one month extension was not granted. Nothing else was decided.

Claims 10 and 11 require a "microporous water-filled phase in excess of 10 volume %", which paragraph 13 of the Declaration states is not suggested in any of the references. Therefore, reconsideration and allowance of claims 10 and 11 is respectfully requested.

To save the Examiner considerable time when this case is taken up, a short phone call is recommended should any issue herein still be unresolved. A few minutes on the phone could clarify a point, or result in a supplemental response which would further limit or dispose of issues. A five minute phone call can save the Examiner a lot of work. Such a phone call would be deeply appreciated.

Respectfully submitted,



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